

**ROBLINELLA ROBLINI (PETTERD, 1879), A RARE TASMANIAN
CHAROPID LAND SNAIL**

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ABSTRACT

This paper discusses the taxonomic history, identification, known distribution, ecology and conservation of *Roblinella roblini* (Petterd, 1879), the type species of the genus *Roblinella* Iredale, 1937. The protoconch is figured, demonstrating the species' distinctness from the common *R. gadensis* (Petterd, 1879). *R. roblini* has been rediscovered at two localities after having not been collected for over one hundred years but appears to be scarce and requires further research.

TAXONOMIC HISTORY

Roblinella Iredale 1937

Type species *R. roblini* (Petterd, 1879)

DIAGNOSIS: As the genus as originally defined is clearly polyphyletic (see below), *Roblinella* is here confined to minute to small charopids (typically 1.5-4 mm wide) with relatively loosely coiled shells, a flat to slightly elevated spire, low primary adult riblets that are not strongly curved, and a protoconch of discrete bladelike spiral ridges with interstitial, approximately radial, riblets.

Roblinella roblini (Petterd, 1879)

Helix roblini Petterd, 1879: p. 38

Flammulina roblini Petterd and Hedley, 1909: p.300, figs 20-22

Roblinella roblini Iredale 1937: p. 332; May 1958: p. 47, fig 43:25; Hyman and Stanisic 2005: p. 256

Type data: "status and whereabouts unknown, presumed lost" (Smith, 1992:203)

Material examined: TMAG E1214 "Launceston Tas", one sub-adult shell, presumed collected by Petterd before 1879; TMAG E1119 "Distillery Creek Tas", one adult shell, presumed collected by Petterd before 1879; author's collection Distillery Creek 515450 5413500 K. Bonham 11 Mar 2005, three adult shells plus one damaged shell; author's collection Distillery Creek 515450 5413500 K. Bonham 16 April 2006, two adult shells; author's collection Valentine Creek 533250 5437500 M.Yee/K. Bonham/ S. Blake 27 Sep 2006, one live-collected subadult (preserved in 75% ethanol).

Petterd described *Roblinella roblini* in 1879 and gave the type locality as “Distillery Creek, Launceston”. Subsequently, Petterd & Hedley (1909) figured “an authentic specimen in the Tasmanian Museum”. Two specimens exist in the Tasmanian Museum and Art Gallery (TMAG) collections (E1119 and E1214, both most likely collected by Petterd). Petterd’s original description, however, indicates a much greater shell width (2.75 mm) compared to either of these, hence at least three specimens were collected. The whereabouts of any specimens collected by Petterd other than the two TMAG specimens are unknown. Old specimen labels (which refer to the figure in Petterd and Hedley, although not explicitly stating that this particular specimen was figured) and the actual dimensions of the specimen are entirely consistent with E1119 having been the specimen Petterd and Hedley illustrated. The only discrepancies between the illustration and the actual specimen are that the number of whorls shown on the protoconch is greater by about 0.4 of a whorl, and also the diagram does not appear to illustrate all primary ribbing on the dorsal surface. These are probably just illustration errors, perhaps as a result of insufficient magnification.

A third, much larger, charopid shell was found in a vial inside the box that held TMAG E1119. This specimen is not *R. roblini* and is actually an undescribed charopid from the Waratah region, of which Petterd collected several specimens. Evidently the larger charopid specimen has become misplaced within the collections.

Iredale (1937) made *R. roblini* the type species of his genus *Roblinella*, which he created for “flattened species with wide umbilicus, radial sculpture and the protoconch spirally striate or liriate, sometimes of large size as in the type species”. However, one of the species Iredale allocated to this genus, *R. agnewi* (Legrand 1871), actually has a smooth protoconch. Furthermore, the genus as created by Iredale contains “species with dramatically different apical spiral lirae indicating that it is polyphyletic” (Hyman & Stanisic 2005). Indeed, no described Tasmanian species apart from *R. roblini* belongs in the genus, but reallocation of the other Tasmanian species to new genera is outside the scope of this paper.

With no further specimens being found following Petterd’s collections, the species was poorly known throughout the twentieth century. Curiously, another species, *R. gadensis* (Petterd 1879) was also very poorly represented in collections until very recently, although it is now known to be common and widespread (Bonham 2003). Although all previous authors had considered *R. roblini* valid, Smith & Kershaw (1979) considered the species to be a synonym of *R. gadensis* without stated reasons, an assessment that is disregarded for the reasons noted below. During the late 1990s, the name *Roblinella roblini* was sometimes used in informal literature, including by the author and principally for a widespread fairly common western and southern Tasmanian species with a protoconch similar to that of *R. roblini* as described by Petterd. However, study of the two TMAG specimens showed that they were distinct from this species, which remains undescribed (Bonham 2003). Finally, Hyman & Stanisic (2005) discussed some features of *R. roblini* (which they treated as a valid species without comment on Smith &

Kershaw's synonymy) in order to justify the creation of their new genus *Macrophallikaropa*.

IDENTIFICATION

R. roblini is a small white charopid (measured adults of 4.15 to 4.5 whorls are of 2-2.45 mm diameter, but Petterd records a 2.75 mm specimen with 4.5 whorls). The spire is flat to slightly raised and the ratio of shell height to diameter varies substantially for a small sample ($.33 < H/D < .48$). The umbilicus is of moderate width with a ratio of shell width to umbilicus width (D/U) between 3.7 and 4.9. The protoconch is between 0.53 and 0.67 mm wide and is of 2.0 to 2.4 whorls. The aperture of adult specimens is typically slightly wider than high and there are 140-150 primary ribs on the body whorl, although the slightly subadult specimen from Valentine Creek has 165 ribs on its last whorl. Figures 1-3 illustrate TMAG E1119, which is also believed to be the specimen drawn in Petterd & Hedley (1909). Nothing is known yet of the anatomy of the animal, which is a slaty bluish-grey colour.

The most significant feature of *R. roblini*, and the feature that distinguishes it reliably from *R. gadensis* and a range of other small Tasmanian charopids, is the protoconch sculpture. The protoconch sculptures of *R. roblini* and a specimen of *R. gadensis* collected close to that species' type locality can be seen in figures 4-5 and 6-7 respectively. The key qualitative differences between the two species are:

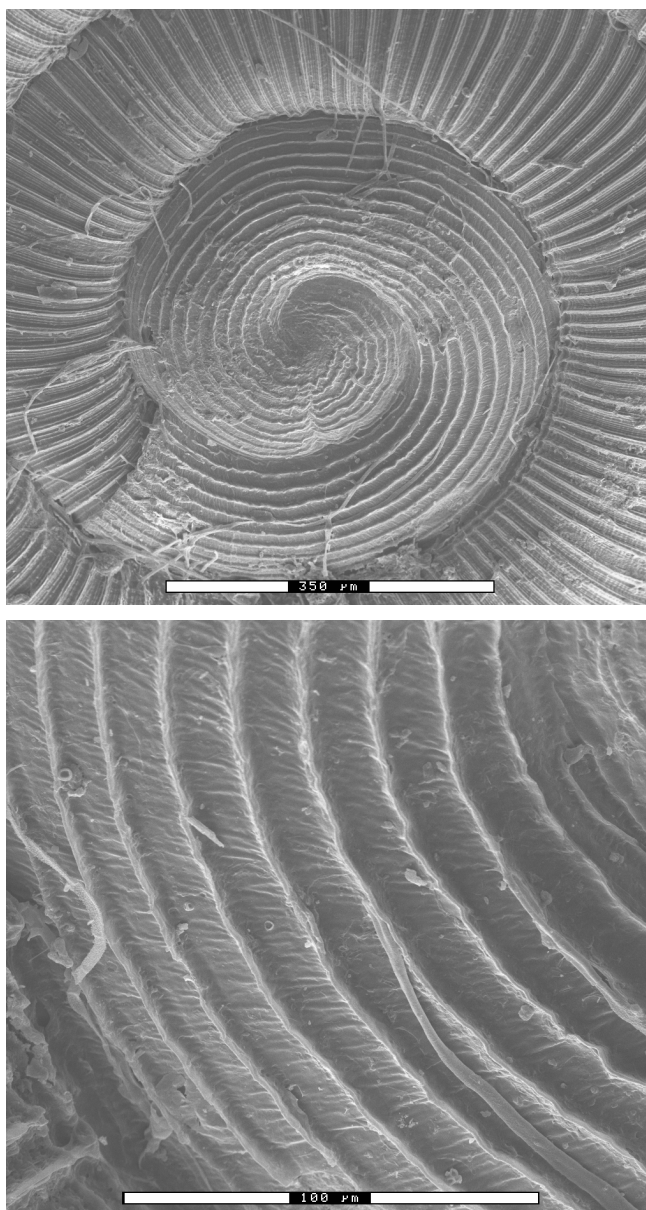
1. The protoconch of *R. roblini* has very numerous small discrete interstitial riblets, which are not quite perpendicular to the primary spirals. This feature is completely absent on *R. gadensis*, on which the interstices are weakly and irregularly corrugated.
2. The spiral ridges on the protoconch of *R. roblini* are high, discrete and blade-like. Those on *R. gadensis* are lower, relatively broad, and sometimes indistinct.

The differences in the protoconch sculpture of the two species are so great that they strongly suggest the species are not closely related and are only superficially similar. Specimens of *R. gadensis* from 72 localities representing that species' entire known range (which covers most of mainland Tasmania) were examined and although substantial variation in the prominence of the protoconch spirals was apparent, interstitial riblets were not present on the protoconch of any specimen. The examined material of *R. gadensis* included specimens from localities near the known range of *R. roblini*, such as Mt Maurice (GR 5462 4263, K. Bonham 9 Jan 1996) and Simons Road (GR 5435 4212, P. Greenslade/J. Diggle 5 June 1989).

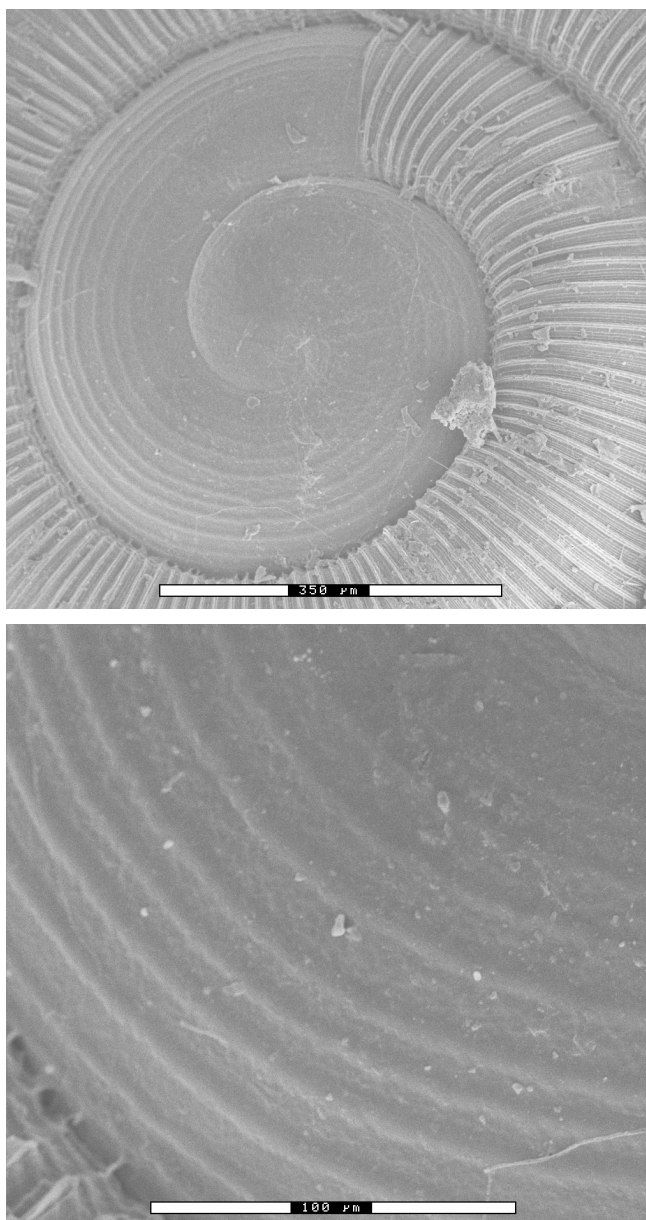
It is possible that the nearest relatives of *R. roblini* (based on protoconch similarities) are undescribed. The widespread western/southern Tasmanian species that has sometimes been mistaken for *R. roblini* is much smaller (adults 1.4-1.9 mm at 3.6-4.0 whorls), with a



Figures 1-3. *R. roblini* (TMAG E1119). Shell diameter 2.2 mm.



Figures 4-5. *R. roblini* SEM photographs showing protoconch sculpture. From a damaged shell collected at Distillery Creek 11 Mar 2005.



Figures 6-7. *R. gadensis* SEM photographs showing protoconch sculpture. Winterbrook Falls GR 414300 5410600 K. Bonham 25 Mar 96 (author's collection).

slightly narrower umbilicus and much lower and denser, almost reticulated adult sculpture. An undescribed species that is much larger than *R. roblini* (adults to 3.7 mm wide) is known only from long-dead shells collected inside limestone caves at Victoria Pass in western Tasmania: whether this species is extant or extinct is unknown as there has been no surface collecting for it. Finally, the Museum Victoria collections contain many specimens of a Victorian species that looks like a slightly larger (2.8-3.0 mm) and much shinier *R. roblini*, with bolder adult radial ribbing and much stronger adult spiral sculpture

NATURAL HISTORY AND CONSERVATION

R. roblini was discovered by Petterd during the 1870s. Petterd (1879) noted that it was “of very rare occurrence, attached to the under surface of stones in moist places”, however elsewhere he suggested the species was one of three occurring “generally in rather dry situations” (p. 37). Petterd & Hedley (1909) later noted *R. roblini* was “extremely difficult to find”. The type locality was Distillery Creek and there is no evidence that the species was collected anywhere else prior to 2006; a record from Mt Farrell by May (1958) was probably a misidentification of the undescribed western/southern species mentioned above.

The author collected four dead shells in two hours of hand-searching at the type locality on 11 March 2005, and found one live and three dead shells in ninety minutes at the same locality on 16 April 2006. For conservation reasons the live specimen was briefly observed and then released; one of the latter three dead shells disintegrated. The remaining suitable habitat at Distillery Creek consists of about 14 ha of wet eucalypt scrub and low forest along both sides of the creek between the Waverley Woollen Mills and Farady Street, and surrounded by paddocks and housing. It is likely that this is where Petterd originally collected the specimens, as Petterd’s other comments regarding Distillery Creek mention the Woollen Mills and are consistent with the habitat of this bush remnant. The author’s first two searches in the area in 2000 and 2004 had concentrated on the densest *Pomaderris* scrub close to the creek, without success. The population actually occurs in short mid-slope scrub comprised mainly of *Beyeria viscosa*, *Notelaea ligustrina*, *Bursaria spinosa* and *Pomaderris apetala* with occasional emergent eucalypts, mostly around 4-5 m tall. Six specimens have been found under dolerite rocks, one in leaf litter and one in litter and moss on top of a dolerite rock. With the exception of a single specimen found about 100 metres upstream, all specimens have been found within about twenty metres of each other. The area where specimens have been found is easily accessed from the adjacent Magnet Street Reserve, but is itself unreserved private land; the snail has not yet been recorded in the mostly drier and generally more degraded habitat in the reserve.

A second locality for *R. roblini* was found unexpectedly during failed searches by Marie Yee, Kevin Bonham and Sean Blake for another land snail species at a coupe near Valentine Creek just west of the The Sideling range, about 30 km northeast from the type

locality, on 27 Sep 2006. Yee found a single live specimen under a fern log near the base of a deep creek in wet eucalypt forest with a dense understorey of *Olearia argophylla*, *Pomaderris apetala* and *Dicksonia antarctica*. In the field, this specimen was assumed to be *R. gadensis* and it was only identified correctly upon return to Hobart. Following this find, a further search of 3 hours 30 minutes duration was conducted by Marie Yee, Kevin Bonham, Anne Chuter and Sean Blake on 7 November 2006, but no further specimens were found. While the gully environment itself, on metamorphosed sedimentary rock, contained a diverse native land snail population (14 species recorded), habitats surrounding the gully were found to have few shelters suitable for specialised native snail species, and to have been degraded by past intense fires and, in some areas, cattle. The area is State forest, but much of the coupe through which the creek runs was scheduled for logging at the time of the survey.

The discovery of a second locality so far from the first was not expected, given that lengthy searches for native land snails at several localities between Launceston and the The Sideling range have not produced any records of the species. Figure 8 shows the two successful sites and the distribution of localities where searches for snails have not resulted in finds of this species. Examples of such localities include wet forest behind Rocherlea, Prossers Forest, Hollybank, Skemps, Patersonia Rivulet, native forest sites around the Lisle plantations and many sites around Mount Arthur (especially near Whites Mill Road on the western side). The species has also not been recorded at any other localities around Launceston, despite a great amount of searching by various collectors in and around Cataract Gorge in particular. It is difficult to predict where other populations might occur on the basis of two populations in rather different habitats, separated by such a distance. However, intact areas further upstream on Distillery Creek, as well as around the The Sideling range, should be targeted. Pine plantations in the Lisle block should also be searched, as many charopid species may occur in them. Whether targeted surveying is a practical method of efficiently finding new localities for *R. roblini*, or whether it occurs so unreliably that new finds will most likely be serendipitous, like that of the Valentine Creek specimen, remains to be seen.

Given that *R. roblini* has been found in only two localities in one of the best-sampled areas in the State (for land snails generally), this species appears to be very scarce. Its survival is not secure at either known locality. The remnant bush area at Distillery Creek is too small in area to guarantee the species' long-term viability and its ecology is subject to edge effects from the surrounding urban and farmland areas. Small bushland remnants often have very high populations of introduced invertebrates and small charopids are often reduced in diversity in, or absent from, such remnants (author's data). Whether introduced invertebrates are directly or indirectly responsible for land snail species loss from small remnants, remains unknown. Some small native snail species that were recorded by Petterd from Distillery Creek (*Pasmaditta jungermanniae* (Petterd 1879) and *Prolesophanta dyeri* (Petterd 1879)) have not been re-recorded there and may be locally

extinct. However, as the latter is naturally scarce in most localities, much more searching would be required to confirm this.

At the Valentine Creek locality, the species would not be secure irrespective of the management of the surrounding State forest, as the gully the population may be confined to is very narrow and surrounded by habitat that appears to be unsuitable. Degradation by cattle from cleared farmland immediately below the State forest is also a management issue for the population. The author has recommended that the streamside reserve surrounding the gully be widened to reduce the risk of adjacent timber harvesting affecting the microclimate of the gully.

Given that the species is evidently scarce, likely to be confined to a small portion of the state, apparently absent from many suitable sites within this area and under threat at the only two known localities, it is recommended that the species be listed on the schedules of the Tasmanian *Threatened Species Protection Act 1995*. Even if several more localities were found over subsequent years, it is very unlikely the species would cease to qualify for at least Rare status at any time in the foreseeable future.

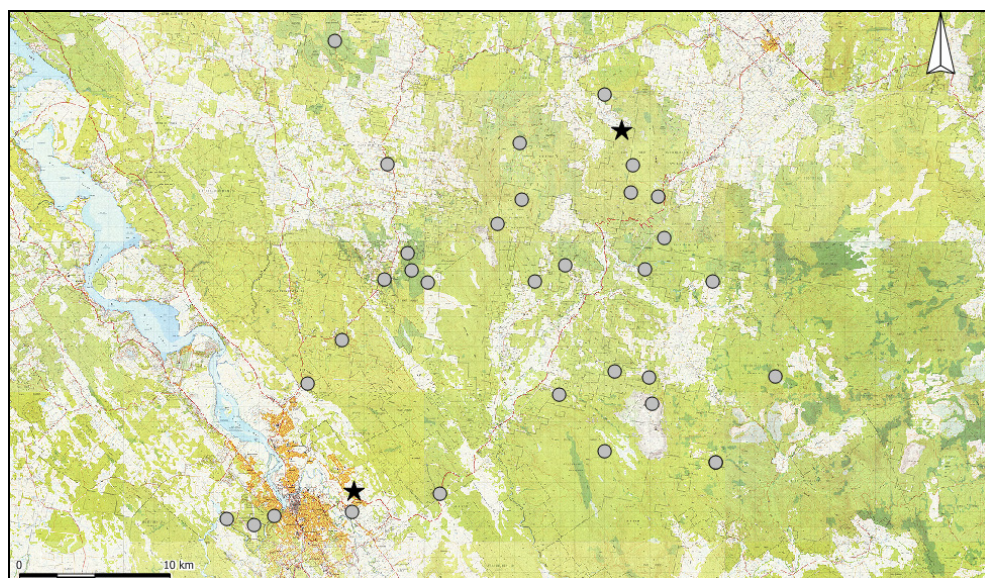


Figure 8. Known range of *R. roblini* showing the two known localities (black stars) and areas where the species has not been found (grey circles) despite searches of at least one hour's duration using methods likely to yield small snails in damp or wet forest habitat. Additional searches very close to other unsuccessful searches have not been included.

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- Note. Some images shown as grey scale tones are also shown as full colour in the central pages of this volume.